HOUSING EXPORTS

TRENDS AND CHANGES IN JAPANESE BUILDING REGULATIONS

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Prepared for CMHC by:
David Cohen and Christopher Gaston

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Cette publication est aussi disponible en français sous le titre : Tendances et changements au niveau des règlements de construction japonais.

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Printed in Canada
Produced by CMHC

Canada Mortgage and Housing Corporation gratefully acknowledges the Canadian Embassy in Japan, the Consulates in Fukuoka, Nagoya and Osaka, Natural Resources Canada, the Department of Foreign Affairs and other related agencies for providing advice and valuable input into the preparation of this report.

Executive Summary

Introduction

- ⇒ Japanese residential construction has between 1.1-1.7 million starts per year
- ⇒ Japanese market is changing: negatives are a decline in housing starts combined with increased global competition balanced by positives including an increase in the type of housing where Canadian companies have expertise (platform frame construction) and changing performance requirements for building materials, products and overall house performance
- ⇒ JAPAN HOUSING BIG BANG include major changes in residential construction sector based on regulatory changes and is expected to restructure the residential construction industry in Japan
- ⇒ this report examines four of the important regulatory changes and identifies the opportunities this creates for Canadian businesses

Regulatory Change	Regulation or Law
New GHLC criteria	Government Housing & Loan Corp. Manuals
Revised BSL	Building Standard Law (performance based)
10 year warranty & other guarantees	Housing Quality Assurance Law (mandatory)
Voluntary performance indicators	HQAL Voluntary Performance Standards

Update December 2000

In November 2000 interviews were conducted in Japan with representatives of Japanese house building firms, laminating factories and pre-cut plants as well as representatives of Canadian organizations and firms in Japan. There was consensus on several points.

- ✪ The Nine Voluntary Performance Indicators provides the greatest challenge to the residential construction industry in Japan.
- ✪ There is little concern about the other three regulatory changes and the general feeling is that the market has either already adapted to these changes or that little adaptation is required.

GHLC

- ⇒ regulatory and fiduciary responsibility for housing in Japan using low cost loans (<3% interest per annum) to control or influence building practices
  - ω provides over 45% of all funds spend on house construction and >75% of funds borrowed for house construction in Japan
- ⇒ to qualify for GHLC mortgages houses must be classified as "durable" and either "barrier free" or "energy efficient"
  - ω durability is related to longevity and seismic strength
  - ω barrier free is related to adapting housing for an aging society
  - ω energy efficiency is related to heating and air movement

⇒ new guidelines will direct builders to change selection of materials and products

- ω traditional post & beam construction will be more open to imported products
- ω exporters need to keep up with changing GHLC guidelines
- ω synergy of building technology with business acumen needed to take advantage of opportunities related to prescriptive GHLC Building Manuals
- ω materials and products should be targeted to one or more of three classification criteria
- ω GHLC increases design and construction complexity creating opportunities for imported design tools

⇒ historically building materials and products were often selected based on inclusion in GHLC Specification List

- ω in past materials for 2 by 4 construction had to be graded according to Japanese standards but for traditional post and beam construction there were no formal requirements, just the word of the carpenter
- ω most (>70%) single family houses are built by small builders (<100 houses per year) with over 40% of all new construction due to rebuilding
- ω 100,000 small builders rely on word of mouth and few regulations
- ω traditionally they followed large builders or used materials on GHLC list
- ω new BSL changes all this but change is not yet fully implemented

⇒ both opportunities and threats from changes to specification criteria for materials

- ω possible to work with Japanese builders to get their materials and products accepted as part of components produced by Japanese firms
- ω exporters can have their products evaluated by associations which can have products placed on GHLC list (difficult task)
- ω new regulations should allow for foreign organizations to test materials and products for Japanese certification (BSL Article 68 Section 26)

⇒ increasing financial difficulty among builders result in price as king, credit as queen and quality as prince

- ω supplying credit can increase sales or price

⇒ adapting products to perform well on new testing criteria will help success

⇒ relationships with material suppliers and builders who will survive the BIG BANG is a recipe for success

⇒ economies of scale required either through use of associations, consortiums or encouraging large companies to enter Japanese market

⇒ excellent potential for exporting tools, software and engineering and design aids

⇒ continued shift to stable building materials (e.g. engineered wood products and kiln dried lumber) and healthy building products (e.g. low toxic gas emissions)

⇒ if products or services help small builders survive then the products or services will be successful in the Japanese market

REVISED BUILDING STANDARDS LAW (BSL)

- ⇒ for first time in 50 years there is a major revision to Japan's BSL guided by desire to improve housing quality and safeguard homeowners
- ⇒ most significant change is to shift from prescriptive code to performance code
  - ω shifts focus from meeting specific measurable requirements to ensuring performance of materials, components and complete houses over time
- ⇒ should accelerate implementation of existing trends including:
  - ω focus on structural stability after Kobe earthquake of 1995
  - ω adapting house to Japan's aging population
  - ω adoption of NA platform frame construction
  - ω increased use of hybrid (mix of traditional post & beam and 2X4 construction)
  - ω embracing use of engineered wood products and KD wood for building
  - ω increased construction of multi-generational houses due to both demographics and economics
- ⇒ new BSL is one component of Housing Big Bang which will restructure the Japanese residential construction industry
- ⇒ phase out of Section 38 approvals over two years

HOUSING QUALITY ASSURANCE LAW (HQAL)

- ⇒ Four Key Aspects to HQAL
  - ω provide a mandatory 10 year warranty for all new houses
  - ω provide home owners with a mechanism to resolve disputes with builders
  - ω establish a housing completion guarantee system
  - ω to establish an additional, **voluntary** set of housing performance standards

HQAL: 10 YEAR WARRANTY AND DISPUTE RESOLUTION MECHANISM

- ⇒ warranty covers all new houses against structural defects and low durability including rain penetration
  - ω home owners will have a set of specific prescriptive standards which must be met over the first 10 years of the life of a house
  - ω an Alternative Dispute Resolution System (ADR) is being set up to ensure fair treatment of home owners
- ⇒ there is concern in Japan whether many of the small builders will be able to get the insurance necessary to offer this 10 year warranty or whether the government will insure these small builders regardless of financial history
- ⇒ large builders already offer comprehensive 10 year warranties

HQAL: HOUSING COMPLETION

- ⇒ additional provision in HQAL to protect home owner from the builder declaring bankruptcy during the construction process
- ⇒ it will provide homeowners with insurance that will cover the cost of completing the construction even if the builder is not able to finish the job

- ⇒ there is concern in Japan whether many of the small builders will be able to get the insurance necessary to offer this housing completion warranty
  - ω there are 100,000 builders who build less than 5 houses per year and there are many opinions regarding how the housing completion warranty requirement will impact these small builders
  - ω many do not have the financial records to offer completion warranties
- ⇒ importers must be very careful not to offer warranties which cannot be met
- ⇒ suppliers of building materials and products must have some mechanism to offer after sales service regarding continued performance over time of their products
- ⇒ product certification and process certification (e.g. ISO 14000) valued in Japan
- ⇒ building materials and/or components must be sufficiently stable to be factory cut and assembled at a later date on site
- ⇒ a limited 10 year warranty for a product would help sales in Japan however it should require proper installation, a problem in Japan with imported products

HQAL: Voluntary Nine Performance Indicators

- ⇒ a set of nine voluntary performance standards to allow accurate comparisons of houses built by different contractors

Indicator	Explanation
structural stability	Earthquake-proof, loading, foundation
fire safety	fire spread time, heat sensors, escapes, etc.
durability	decay & deterioration
ease of maintenance	ratio of common pipes to common pipes
energy efficiency	insulation, window types, etc.
air quality	Ventilation & formaldehyde
light environment	ratio of exterior openings to wall area
acoustics	insulation for noise, transparency loss, etc
barrier free design	Convenience for elderly & physically impaired

- ⇒ house builders in Japan are already using these nine performance indicators to differentiate their house from the competition
- ⇒ Performance Standards as well as the Evaluation Standards are currently being translated into English as a joint project of Industry Canada, The Council of Forest Industries and the American Forest and Paper Association and will be completed by the end of January, 2001
- ⇒ both houses and components can be evaluated on these nine indicators
- ⇒ there is the potential to accurately segment the housing market based on these nine performance indicators and identify target markets of consumers for housing
- ⇒ it may be possible to have foreign evaluation bodies approve building components based on the nine performance indicators
  - ω this requirement has the potential to open up the Japanese market to more finished building components and systems or close the market to anything other that imported materials which must be assembled in Japan

- only time will tell whether this law becomes a non-tariff trade barrier or a crow bar to open the Japanese market wider for building components such as structural insulated panels

Impact of Big Bang in Residential Construction

- ⇒ despite the current unstable state due of transition there **will** be major changes in the residential construction sector in Japan
- ⇒ at risk are many of the small builders who will most likely have to become larger, work for existing larger firms or form consortiums or groups to have the economies of scale to meet challenges of housing big bang
- ⇒ this poses problems for existing suppliers of building materials and products
  - should they stick with their existing customer base which may shrink or even disappear over time or should they develop new channels of distribution which may alienate existing clients
  - only by listening to on site personnel that are following the shifts in the residential construction sector in Japan can ensure that the right decision is made at the right time
- ⇒ this structural change will open the door for new competing suppliers who can attest to strict performance characteristics of the products they are supplying
- ⇒ large builders will be looking for special relationships with suppliers that can adjust to meet rigorous performance standards
  - they will also seek exclusive arrangements to ensure an edge in what will become an increasingly competitive market
- ⇒ it will be very important to monitor the construction sector to determine which changes will be truly implemented and which will exist on paper only
- ⇒ there will also be opportunities for the tertiary sector as consultants and advisors to help Japanese companies adapt to the new realities of residential construction in Japan

Summary

There are dramatic changes occurring in the residential construction sector in Japan. These changes are being driven by radical changes in various regulations, both mandatory and voluntary, in Japan. As this change occurs the sector is also downsizing due to reduced housing starts because of changing demographics in Japan. This creates a two edged sword for Canadian exporters to Japan. On one hand our strong market presence is threatened as the rules change. Current successes are challenged and there is ample opportunity for new non-tariff trade barriers. On the other had new opportunities appear as the rules change. The unwritten preference for Japanese products and materials may disappear, as performance becomes paramount.

Only continued monitoring of the situation and a short turnaround time to transmit changes in the regulations and industry structure in Japan can ensure that Canadian companies can compete against the myriad competition, both domestic and foreign in the Japanese market.

Acknowledgements

The authors would like to acknowledge the assistance of many of the people stationed in Japan representing Canadian interests for the government, associations and private firms. Over the years these very knowledgeable people have provided important "lessons" and information to the authors as well as much detail for this report. A special acknowledgement is for the Japanese representatives of the Council of Forest Industries, Tokyo Office and the representatives of the Canadian Embassy and Consulates in Japan. Without the assistance of these two organziations this report would not have been possible. In addition the authors would like to acknowledge the help the staff of CMHC who provided direction and enthusiastic support.

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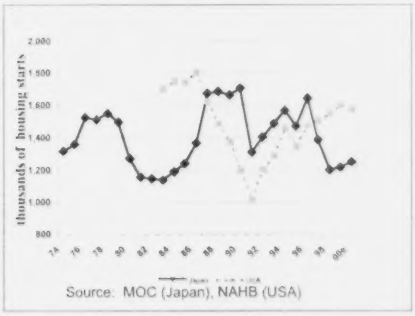
1.0 Introduction

1.1 Background

The Japanese housing market has rivaled the US market in terms of overall housing starts during the past three decades (see Figure 1). This is despite the fact that the population of Japan is only 126 million people compared to almost 300 million in the US. Japan averages ten times as many housing starts as all of Canada with between 1.1 and 1.7 million starts per year compared to the Canadian average of 110,000 to 170,000 per year.[1] However it is not just the sheer size of this market that makes it attractive. Japan, like Canada has a tradition of wood housing and in addition the Japanese people have embraced western styles of house design and construction during the past fifty years.



Source: MOC (Japan), NAHB (USA)

Figure 1: Japanese/US Housing Starts

Canada has maintained a significant presence and trade in the housing sector in Japan particularly since the seventies. However, there have recently been additional threats to the position of the Canadian industry in exporting to the Japanese market.

[1] Despite similar number of housing starts in Japan and the USA the average house size differs dramatically. On average the Japanese house is between 50-60% of the area of a US or Canadian house.

There are three factors that contribute to the apparent decline of Japan as an attractive market for Canadian exports concerning house design and materials. The first is the recent economic recession in Japan and the impact this has had on Japanese housing starts. New house construction has declined by 25% since 1996 (from 1.66 million to less than 1.25 million).

The second factor is the short and long-term demographics in Japan. During the next twenty years the population is not expected to increase and the proportion of elderly will increase dramatically. This will ensure that housing starts do not regain previous high levels and, in fact, will decline.

The third factor is the recent deluge of global competitors in the Japanese market for building materials, products and systems. The increasing competitiveness of European producers and the increasing sophistication of Asian manufacturers combined with increasingly sophisticated non-tariff protection measures for Japanese domestic producers have contributed to a feeding frenzy of export initiatives in the Japanese housing market. Despite this scenario of doom, this market represents a tremendous opportunity for Canadian building materials and systems. Much of this opportunity arises from the past and present strong presence and understanding of the Japanese market.

1.1.2 Increased Opportunity

There are three factors that contribute to the increased opportunity the Japanese housing market represents to Canadian industry. The first is that despite a decline in new house construction there is expected to be an increase in certain types of construction activity. There will in an increase in the proportion of new construction that is single-family dwellings, the forte of much of Canadian building technology. This shift results from the end of the shift of rural populations to urban centres, which required a disproportionate amount of high rise building. There will also be a corresponding

need for increased renovation of existing housing stock. This renovation is called reform in Japan. The reason is the aging of the tremendous amount of building during the sixties, seventies and eighties which needs refurbishing. These two areas present opportunities for growth in a shrinking market. These changes will provide opportunities not only for Canadian exporters but also for other countries exporting to Japan. However, the preponderance of wood building in Japan and the corresponding Canadian expertise does provide an advantage to Canadian firms targeting Japan.

The second factor is the increasing aged population, which will require specialized housing. This presents much opportunity for Canadian products, systems and technology specifically targeted towards the active seniors common to Japan. While the population of Japan is expected to remain relatively stable at 125-126 million until 2020, the number of elderly will increase dramatically (see Figure 2).

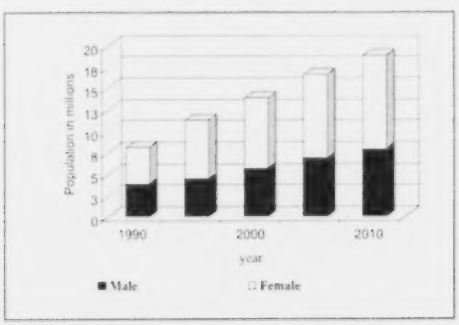


Figure 2: Number of Elderly over 70 Years

The third factor is the changing regulatory environment for residential construction in Japan. Many of the regulations and policies governing residential construction in Japan are undergoing major revision. For some of these, such as the Building Standard Law of Japan (BSL) this is the first major revision in 50 years. For others, such as the new Housing Quality Assurance Law (HQAL), there is new legislation. These changes could create opportunities for Canadian industry to expand its role in exporting to the Japan housing sector.

The focus of this report is to examine regulatory changes for house construction and identify the opportunities this creates for Canadian businesses.

1.2 Regulatory Changes in Japan

Japan is in the midst of a "big bang" in the residential construction sector. The force directing this dramatic change is regulatory and consists of both mandatory and voluntary guidelines and regulations. There are three important areas of change in the regulatory mechanisms in Japan regarding residential construction. The first consists of changes to the Government Housing and Loan Corporation (GHLC). This institution is primarily concerned with providing mortgages for new house construction and reform. The second consist of changes to the BSL. The changes to the BSL were initiated in May 1998 are currently being implemented. The changes transform the BSL from a specification-based building code to a performance-based building code that applies to all types of residential construction. The third important area of change is the new Housing Quality Assurance Law enacted on April 1, 2000. This law requires for the first time interim and final building inspections leading to a mandatory 10 year warranty as well as a required completion guarantee for new houses being constructed. In addition the HQAL encourages the use of voluntary performance measures for new house construction. This report looks at these regulatory changes in four sections summarized in Table 1.

The four regulatory components are 1) the new criteria for GHLC; 2) the shift of the BSL to performance-based criteria, 3) the required 10 year warranty and completion guarantee as outlined in the HQAL, and, 4) the voluntary aspects of quality assurance of housing will each be addressed in the following report. These four changes are the section headings of this report.

Table 1: Four Regulatory Changes Leading to Big Bang in Japanese Residential Construction

Regulatory Change	Regulation or Law	Ministry Responsible
1. new GHLC criteria (Section 2)	GHLC Building Manuals	Ministry of Agriculture Fish and Forestry and Ministry of Construction
2. revised BSL (Section 3)	Performance based codes	Ministry of Construction
3. 10 year warranty and other guarantees (Section 4)	Housing Quality Assurance Law (HQAL)	Ministry of Construction
4. voluntary performance indicators (Section 5)	HQAL Housing Performance Indication Standards	Ministry of Construction

This report will describe each change in the regulation, its expected impact in Japan and the impact on Canadian businesses with a desire to initiate or increase export to the Japanese residential construction market.

Not all of these changes are fully implemented at this time. For example while the first revision of the BSL required an interim and final inspection of all new housing. There were only 1,800 building inspectors at the time of implementation, making it physically impossible to inspect 1.2 million housing starts. There were provisions for private inspectors however the process to develop standards and to qualify private inspectors prohibited the timely performance of interim and final inspections as proscribed by law.

Although the BSL revisions went into effect in May 1999, it is anticipated that the full implementation of this revision will take some time. This clearly illustrates that passing new laws and regulations is not the same as enforcing all aspects of new laws and regulations. Due to the significant impact of the four changes there is a genuine concern in Japan and abroad about how many of these will be fully implemented, how many will be moderated prior to full implementation, and what this will mean to the demand for housing components. These concerns will be addressed in each section of this report.

In each section there will be two sets of boxes. The first will include a summary of general information in that section that has "**Application to Canadian Exporters**". In addition at the end of each section will be a box containing information on "**How to Reposition for Changing Japanese Market**". The information in this box will include specific recommendations and examples for Canadian exporters to profit from the changes discussed in that section.

It is important to Canadian suppliers of building materials, products and technology to proactively position their offerings to meet and solve challenges in the Japanese industry resulting from the very significant regulatory changes.

2.0 Government Housing and Loan Corporation

2.1 Introduction

Since the end of the Second World War the Japanese government has been active in promoting the design and construction of new houses. Not only did they provide financial support but also directed the style and type of house that was constructed. It was in this way that government policy regarding social issues (e.g. promotion of the nuclear family since the fifties) and practical issues (e.g. encouraging workers to move to industrialized urban centres) could be implemented. The Japan Housing Corporation became the Government Housing and Loan Corporation (GHLC) and added a fiduciary responsibility to its regulatory responsibility. However many of the GHLC regulations specified are voluntary since they only are required to qualify for a GHLC loan. However, few houses are built in Japan without some financial support from the GHLC[2].

2.2 Finance

As of June 2000 the GHLC can provide loans of up to 12.7 million Yen (CAN$176,000 or US$115,000) for new house construction. Interest rates are low (2.75% per annum) and are fixed for a good portion of the 35 year term. This covers the cost of about a third of a new house purchase in Japan and slightly less in the Tokyo region (including land). For owner built homes the GHLC provides about 45% of the funds with another 45% coming from personal savings and the final 10% coming from banks and other lending institutions. Developers responsible for apartments and the houses built for sale receive about 48% of their funding from the GHLC, 23% from savings and the rest from various sources.

It is important for exporting companies to understand the role of financing not only for major consumer purchases such as housing but also for businesses. Often it is the financing organization that controls many of the product decisions. For example consumers will follow the GHLC guidelines in terms of design and material selection in order to qualify for a low interest loan. Builders often rely on credit from building materials and products suppliers for financing rather than operating loans from a financial institution. This often gives these distributors significant power concerning material and product selection in new houses and apartments[3]. These examples illustrate the importance and power of the policies of the GHLC resulting from their financing role.

Since the economic downturn in 1997 the Japanese government has significantly increased the funds available to the GHLC to provide for residential and nonresidential construction. However, the long term policy in Japan is to reduce the funds for construction available from government sources and increase the role of private financial institutions.

2.3 GHLC Loan Qualifications

The general specifications for construction of 2x4 and traditional post and beam housing -- published by the GHLC -- have been updated effective October 1, 1998 to reflect the recent revisions of the Building Standard Law. There are now very structured means of qualifying for the low interest, long term GHLC loan.

The following section explains how a house built from wooden construction qualifies for the GHLC loan. Wood houses represent over 45% of all new construction in Japan

[2] For a thorough review of the GHLC and other agencies see Mu Design Inc., 2000. Technical Evaluation of Recent Changes in Energy Conservation and Environmental Measures in the Japanese Housing Industry available from Natural Resources Canada.

[3] For more information please see Jahraus, Michael T. and David H. Cohen, 1997. An Examination of Japanese Distribution Systems for Imported Wood Products available from the Pacific Forestry Centre, CFS, Victoria.

(by number of starts) and are responsible for more than half of the floor area built each year. Wood starts represent over 80% of all new single-family structures.

According to the 1998 revision of the GHLC Manual there are three classifications for housing: 1) barrier free, 2) energy saving, and, 3) durable.

The objective of **barrier free** housing is to make a house "friendly" in case one of its inhabitants is disabled or has decreased physical capacity. This is occurring more frequently due to the aging society in Japan. This objective is to ensure that the next generation of houses is suitable for the rapidly aging population and can accommodate the surge of seniors shown in Figure 2. Specifics include interior opening size, width of passageways, size of bathrooms, non-slip floor surfaces, use of handrails and more. Most particulars can be explained as ensuring future houses are easily adaptable to those in wheelchairs or walkers. The specific regulations are detailed in the Building Manuals[4].

Energy saving houses have a structure that is insulated for heat conservation in accordance with GHLC specifications and standards provided by the Ministry of Construction (MOC) Energy Organization. The GHLC specifications provide specific details on both design and installation to meet a variety of government guidelines regarding air tightness, ventilation and window performance. The details ensuring energy efficiency are expected to become more rigorous given Japanese government and consumers' attitudes toward energy efficiency and global warming.

Durability is specified for all aspects of superstructure from foundation to wall systems. Included are durability of wood members by species group, increased foundation heights above finished grade, improved crawl space and attic ventilation requirements and more. Again specific details are provided in the revised GHLC Manuals. The focus on durability is due to the Japanese concern with stability during earthquakes after the Kobe quake of 1995.

To qualify for the Standard Interest Rate Loan (<3% per year with a 35-year term) the following criteria must be met. The house must qualify as both durable and barrier free or both durable and energy saving. It is clear that durability is of prime importance. This is shown in Figure 3.
There are both mandatory and recommended practices necessary to qualify for each of the three standard loan criteria. These may need to be "corrected" due to regional conditions such as "heavy snow zones". Only the mandatory practices need be met to qualify for loans. However, some of the recommended practices may become mandatory in the future. These regulations apply to both traditional post and beam houses as well as 2 by 4 houses.

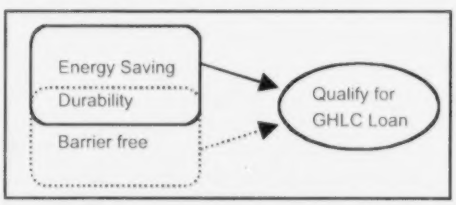


Figure 3: To Qualify for GHLC Loan

Since 45% of all funding required to construct new houses and over three quarters of all funds that are borrowed to construct new houses are provided by the GHLC it is important for builders and developers to ensure that their houses meet the GHLC guidelines. For exporters of systems this becomes critical to enable their customers to finance their purchase with low cost government subsidized loans. For exporters of building materials and products it is vital to understand how your product contributes to the house qualifying for these low cost and very important loans.

The GHLC provides funds for 45% of all expenditures and over 75% of all loans for new house construction in Japan.

[4] The Council of Forest Industries, Vancouver, BC, has translated, published, and made available an English version of the Japanese Government Housing Loan Corporation Building Manuals.

There are additional funds available called the Extra Loan House Construction. To access these funds the house must also qualify under the following three criteria spelled out in the GLHC Manual: 1) a high standard house, 2) a house designed and built for the aging society, and, 3) a house with additional energy saving insulation. These three also have their specifications detailed in the revised GHLC Manuals.

For specific technical information regarding energy efficiency and other environmental building criteria such as moisture control please see "Technical Evaluation of Recent Changes in Energy Conservation and Environmental Measures in the Japanese Housing Industry" by Mu Design Inc. This publication provides technical details from the GHLC and other Japanese government criteria and is available from Natural Resources Canada, Ottawa.

The government is having significant impact on how houses are being built by changing the GHLC guidelines. This enables the construction industry to "voluntarily" shift to construction more suitable for an aging society. It also allows the government to remove inefficient, low quality or financial unstable builders but without direct action due to the voluntary nature of GHLC loans.

What does this mean to Canadian Exporters

The new more detailed requirements for builders in Japan to qualify for GHLC loans is a two edged sword for Canadian exporters. It will require time and energy to understand the specifics that builders must meet for homeowners to qualify for GHLC loans. This will guide their selection of building design, systems and products. Exporters must be kept fully appraised of the specific guidelines in the GHLC manual as well as the performance requirements of products, components and building systems. However it also provides additional opportunities for Canadian exporters.

1. Traditional post and beam houses should now be open to using more imported materials and systems. More reliable and stable materials are currently available from the global market compared to the domestic market.

2. Material and component suppliers can work with architects and engineers to ensure Canadian material meet performance criteria in GHLC manuals. There needs to be a marriage of building technology and science with the business acumen of Canadian exporters in order to take advantage of the opportunities created through the prescriptive GHLC loan requirements.

3. Materials, products, designs and systems can be targeted, both in modification and in promotion, directly at one of the three key criteria (durability, energy saving and barrier free). Canadian products and technology have a proven track record in many of these areas which should be stressed.

4. The GHLC manual makes the design of a house much more complex. This creates an opportunity for Canadian exporters to provide tools that can simplify the design of these houses. This includes items such as software, design manuals and building systems created to help builders in Japan meet GHLC requirements.

2.4 GHLC AND REGULATIONS

The government of Japan uses the GHLC to implement changes in how houses are built without having to make mandatory changes to building laws. For example, by requiring the use of "durable species of wood" in order to qualify for a GHLC loan, specific species may lose significant market share and others may gain. Current indications are towards favoritism for indigenous species of wood. The use of GHLC regulations enables changes to appear voluntary but have the same impact as legal requirements. This limits appeals by other countries concerning unfair trade practices since these regulations are voluntary. It also reduces domestic criticism for the same reason.

For non-traditional housing (e.g. 2 by 4) all materials, products and systems must be approved by the Japan Agricultural Standards (JAS) or the National Lumber Grading Authjority (NLGA) before use. For traditional post and beam houses there are no requirements for grade stamps or other standard specifications. The carpenter is fully responsible and selects specific building materials and products based on their expertise. While this appears to be an opportunity, the selection of materials which is left to the discretion of the relatively unworldly carpenter is controlled by tradition and by the "least problem creating" selection. The Japanese carpenters tend to follow the lead of government, long term suppliers or large homebuilders. This method for material selection for traditional construction is much like British Common Law; it is acceptable since it is how it has always been done.

The poor performance of many traditionally constructed houses during the Great Hanshin earthquake instigated regulatory changes. The purpose of these changes is to ensure higher quality in traditional construction without any direct criticism of traditional carpentry practices.

This section will now describe how building materials and products are currently "accepted for use" in Japanese residential construction. This may not continue for building materials due to the changing Building Manuals. However this system is expected to remain for building products.

2.5 GHLC AND PRODUCT CERTIFICATION[5]

2.5.1 Background

In Japan carpenters that build less than 100 houses per year are responsible for 70% of all single-family housing (Table 1). There are over 100,000 of these builders called komuten and they have kept traditional post and beam construction alive in Japan. These small builders are responsible for most of the wood housing starts each year.

Table 2: Builders of New Houses in Japan

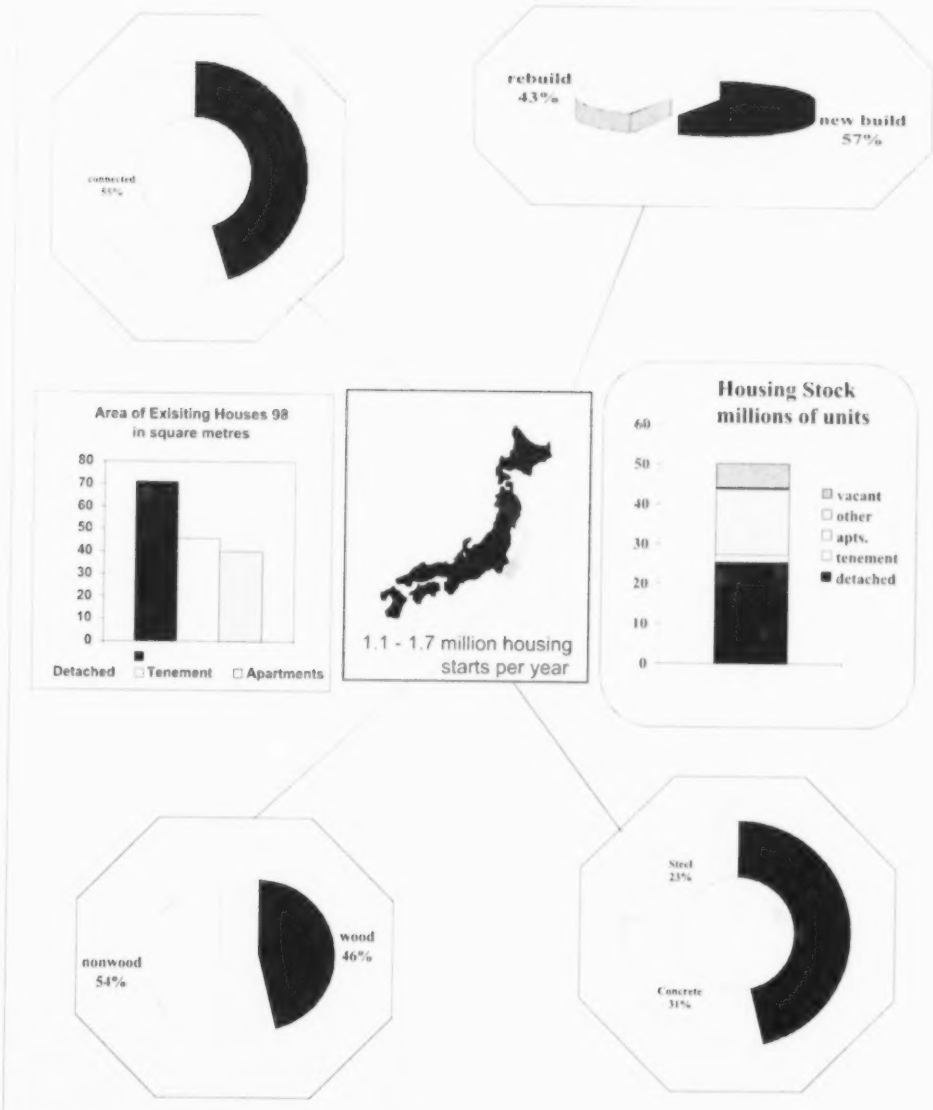
small builders	70%
major house builders (prefab)	20%
franchised chains, component producers	10%

Source: Japan Lumber Journal Oct.15/99 pp 1

It is interesting to note (Figure 4) that over 40% of all new house construction in Japan are due to rebuilding part of the current housing stock. Concrete and steel dominate high rise construction while wood dominates single family construction. Single family starts account for about half of all housing starts in Japan. This means that these small builders are responsible for almost a third of all residential construction in Japan each year.

The 100,000 builders rely mostly on word of mouth and personal references to continue to obtain contracts to build houses and most take some responsibility for workmanship and performance for several years. This responsibility covers not only major items such as superstructure, roof and walls but also finish items such as flooring, windows and cabinets. Thus most (but not all) carpenters are very concerned both with the durability and maintenance requirements of products they use in house construction. This leads to the careful selection of materials by these komuten.

[5] This section is adapted from Wahl, Cohen, Kozak and Gaston, 1999.



adapted from MOC, JAWIC, Better Living and Japan Statistical Yearbook, 1999.

Figure 4: Facts Regarding New House Construction in Japan

2.5.2 Introduction to Selection Process for Building Materials and Products

The process by which materials are available to builders of all sizes in Japan is in the midst of dramatic change. This is particularly true for structural material or components that are used for foundations, principal building parts which are important in terms of safety (i.e. structural integrity during earthquakes and general use), fire prevention and sanitation[6]. Materials and components for these uses will have to be approved and are referred to as "designated building materials". The process of having materials or components designated is not yet finalized however foreign testing agencies will play a role in being able to approve designated materials or components. These changes will predominantly impact structural components. A review of the process by which building materials and products have been approved in the past is presented below. Many of these processes will not change, particularly for non-structural components while others will change dramatically over the next few years.

How Large and Small Builders Have Selected Building Material and Products

Since the houses built rely on techniques and some materials that date back thousands of years, there has been little government regulation controlling the selection of materials or guiding the details of the traditional post and beam construction method. This leads to little official regulation in the old building laws concerning the choice of materials for traditional construction. The large factory based builders often set their own exclusive standards and test materials in-house based on these proprietary requirements. Smaller builders rely on the GHLC Specification List (the List). For imported products, that are usually not on this list, the GHLC poses a major barrier to market entry. The rest of this section will discuss the complex method of how building materials and products are approved for use or put on this list.

Figure 5 shows the various means of gaining acceptance for building materials for use in the construction of traditional Japanese wood houses.

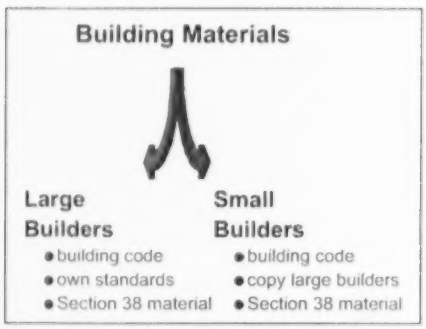


Figure 5: Traditional Acceptance of Building Materials

Building Materials – Building Products

The Japanese define building materials as different from building products. Building materials are the commodity products that are used in constructing a house and are often the structural components. This includes products such as wood posts and beams, two by fours, roof rafters and floor joists. It is these materials that are referred to in the bottom right corner of Figure 4. Building products tend to be the more finished goods that go into the house. This includes such items as flooring, windows, kitchen cabinets, fixtures, plumbing, etc.

Large Builders

To select building materials large builders and komuten follow similar but different criteria, as shown in Figure 5. For large builders they either follow the building code if it specifies specific materials such as for 2 by 4 house construction. The building code, which does not specify materials in detail, does require certain materials to be graded according to the Japanese Agricultural Standard (JAS) by an accredited organization.

Alternatively they often develop their own set of standards and use these standards to

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[6] Adapted from "Law for Amendment of the Building Standard Law 98" published by the Building Center of Japan.

test and select structural building materials. The large builders can do this since they have their own research, testing and development institutions.

The third method large (and small) builders use to accept a building material is to apply for an exemption for a specific product based on Japanese testing of that product. This falls under Section 38 of the building code. This frequently costs between $CAN 250,000 – 400,000 to develop the proper testing and paper work to submit to the authorities in Japan. This provides approval on a proprietary basis, which does create some market advantages. However, it also inhibits modifications to the material to improve its performance without additional approval processes. Parallam® is one product that has attained Section 38 approval in Japan as a structural material. **The use of Section 38 is being phased out and the new Building Standard Law omits this article completely. However products that are already certified under section 38 retain their approval over the next two years**. Article 68 – Section 26 of the revised building law will stipulate the methods for testing of materials so they can qualify as designated building materials (see Section 3 for additional information of this section of the new BSL). Both Japanese and foreign testing agencies will be allowed to test and certify materials and components for Japanese construction. The details have not yet been finalized and this process should be clarified in future studies.

Small Builders

Small builders also follow the building code specification where applicable. While they also could have used Section 38 the cost often precluded this avenue towards accepting new building materials. The third, and common, way for komuten to accept new building materials is to copy large builders who develop and apply their own proprietary standards and often are the innovators in adopting new materials or products.

There are also different roots for large and small builders for the acceptance of building products, as shown in Figure 6. Large builders often produce their own building products or are formally linked with manufacturers of building products. For example Tostem is one of the largest window manufacturers of aluminum windows in Japan and also builds over 5,000 houses per year. Some large builders develop their own standards for building products similar to the proprietary standards developed for building materials. For example a large franchise house builder has approved one kitchen cabinet manufacturer in Vancouver and authorized builders can specify these kitchen cabinets with no additional testing.

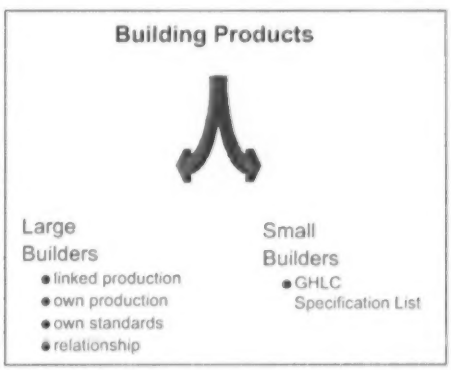

Figure 6: Traditional Acceptance of Building Products

Large Builders

Both linked production and the meeting of large builders' proprietary standards are examples of selecting products through relationships. At times large builders will work with a supplier to design and manufacture a proprietary building product to the advantage of both participants.

Small builders select building products predominantly by transferring responsibility to a third party. The most common means is use only materials that appear on the GHLC specification list. This will be discussed in detail later in this section.

2.5.3 How Materials are Approved

The process presented below is currently under revision. While there will be significant changes to the approval process some of the following processes will be retained even after the revisions are fully implemented in Japan over the next several years. It is important to understand the situation that is being changed as well as the changes that will be implemented over the next few years.

Three organizations are involved in approving building materials and products for use in Japanese house construction. The Building Center of Japan and Howtec are the major organizations while Better Living also plays an important but lesser role in approvals. New building materials that have to be approved by the Ministry of Construction go through a technical appraisal system carried out by the Building Center of Japan. This organization tests wood materials to be exempted from requiring a JAS stamp (section 38 of Building Standard Law of Japan prior to the current revision) (*The Building Center of Japan* 1998). This organization is expected to retain much of its importance under the new Section 37 of the BSL.

For building products, the small builder uses the GHLC specification list as a de facto certification system. They assume that if it is on the list then their customers will not hold them responsible for any problems or defects but transfer that responsibility to the government and its agents, the GHLC. This means that producers of building products consider the placement of those products on the list as a necessary step to develop measurable market share among small builders of predominantly traditional wood houses.

Howtec and Better Living are two organizations, which evaluate building products. Both are voluntary organizations funded by Japanese industry and their associations. The GHLC almost always follows the recommendations of these two organizations regarding the addition of products to the GHLC list as long as the recommendation is accompanied by sufficient test data.

Each organization usually has a member of one of the key ministries as its executive director. This provides a link between individual companies, their associations and the appropriate ministry in government. It is common for certain senior level bureaucrats within each Ministry to retire between age 50 and 55. These are the people who have served the bureaucracy well but will not be promoted to the very top level of that Ministry. In Japan they frequently retire early and become the senior administrators of organizations such as Howtec, The Building Center of Japan and Better Living. For example, it is usual for a senior bureaucrat from either the MOAFF (Ministry of Agriculture, Forests and Fish) or the MOC (Ministry of Construction) to head Howtec. They provide a human link between the powerful Japanese government bureaucracies and the industry associations directly impacted by these bureaucracies. Linkages are shown in Figure 7.

Howtec, which is supported by the Ministry of Agriculture, Fish and Forests (MOAFF) and MOC, tests building materials. This includes many of the new wood species and products as well as windows, doors and engineered wood products. Howtec tends to have a strong focus on construction materials and wood in particular. Their testing and recommendation leads to a product being added to the list.

Better Living tests building products. This includes appliances, electronics, plumbing and also windows and doors. Their testing and recommendation also leads to a product being added to the list. Therefore, the organizations that control placement on this list have substantial power for firms trying to introduce new products. This is true for use in the Japanese traditional wood housing market that is responsible for over a third of all new housing starts each year.

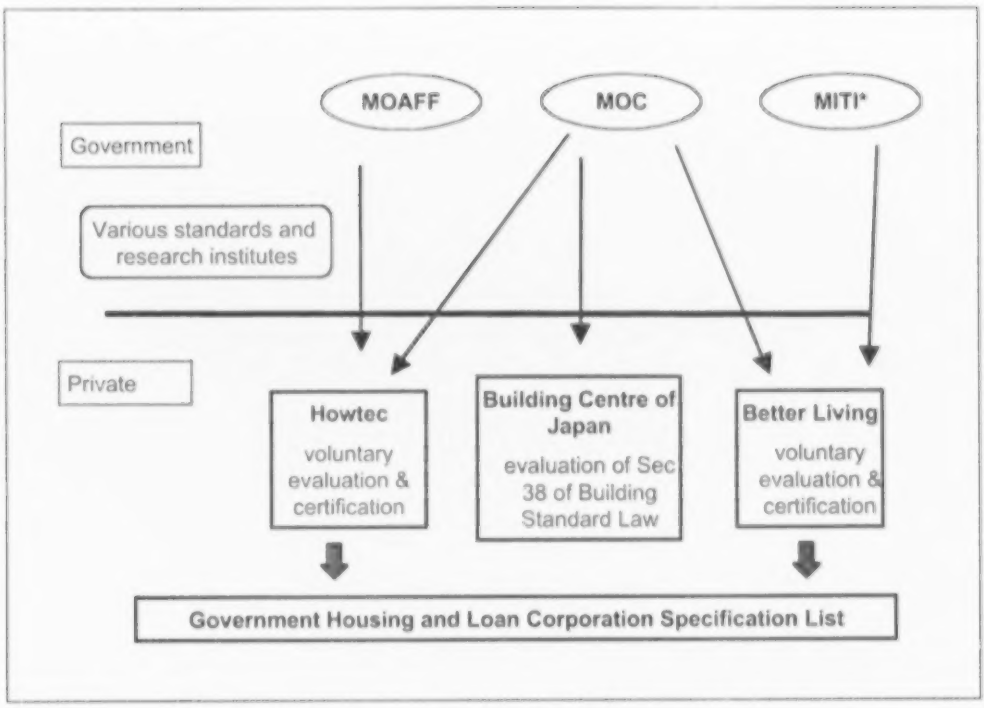

Figure 7: Linkages for Material and Product Listing

- MITI stands for Ministry of International Trade and Industry

What does this mean to Canadian Exporters

The difficulty of being added to the GHLC list is a barrier to entry for imported building products. There were three ways to introduce a new building product or material.

1. Canadian exporters of new building materials and products can cooperate with a larger Japanese house builder who then takes responsibility for certifying the imported good. This requires the development of long term relationships. Some Canadian window manufacturers have developed long term relationships with large Japanese house builders have developed exclusive arrangements.
2. Exporters can attempt to have their product evaluated by the associations controlled by Japanese producers of the same products. While not impossible this avenue is open to administrative abuse.

Reposition For Advantage Based on Revised GHLC

1. With increased bankruptcies providing credit can be a competitive advantage. Bank loans for businesses are difficult to obtain and while Price is King in Japan, Credit is Queen and Quality is Prince. It may be possible to attain a price premium in exchange for generous credit terms.
2. For building materials an exporter must know how their material is evaluated in terms of durability and energy efficiency. The positive aspects need to be communicated to customers while data needs to be collected to improve negative evaluations. For example certain species are ranked lower than they should be and test data needs to be collected to improve their ranking.
3. For building products relationships need to be nurtured with financially sound large builders and distributors since they impact product selection by the small builders responsible for so much of the new construction. Many distributors and large builders are looking for exclusive building products that will give them an opportunity to compete on some characteristic or product rather than on just price. Exclusive arrangements with either builders or large distributors for customized Canadian products are opportunities worth exploring by firms serious about long term exports to Japan. For example a proprietary, snap together floating floor provided exclusively to a large home builder may be an opportunity for both new product development and improved exports.
4. There is increasing need for small builders to pass on responsibility to larger suppliers of materials or products. While many Canadian firms are too small on their own to take on this responsibility there is opportunity for groups of firms to join together to create the critical mass necessary to partner with large Japanese builders or distributors. The use of associations such as BC Wood Specialties Group, trade missions such as Team Canada visits and/or cooperative selling efforts can help combine small firms to create the advantage of size.
5. There is potential for export of design software and tools that determine the performance of various materials and products in tandem to ensure performance based on GHLC criteria. Some of the software tools could be modified to provide a profitable and beneficial tool for Japanese builders and distributors.
6. Stability criteria will continue to promote the switch to more stable structural members such as kiln-dried wood and engineered wood products.

3.0 The New Building Standards Law of Japan

For the first time in fifty years, Japan has introduced significant revisions to their Building Standards Law (BSL) . Considered the bible for Japanese home construction, these revisions, along with the subsequent enacting of the Housing Quality Assurance Law, have created so much uncertainty for the building industry that it has been named the ***"Housing Big Bang"*** in Japan.

The most significant change from the previous BSL is the move from a prescriptive-based building code system to a performance-based one. As will be discussed in this section, this change has a major impact on builders and building material suppliers alike. However, also to be discussed is the uncertainty of how non-prescriptive the new BSL will actually be.

No doubt influenced by the Great Hanshin Earthquake of 1995 and reinforced by recent problems with builder/contractor bankruptcies, the move to the performance-based BSL of 2000 is very much directed toward the protection of the home owner.

There has been considerable speculation, both in Japan and by international building material suppliers, around the ability of the small and medium sized builders in making the transition to performance-based standards smoothly. The main objective of this section is to identify the reasons behind this speculation, to clarify what this means for the Canadian building products exporter, and to benchmark the current situation for follow-up investigations.

3.1 Prescriptive Versus Performance-Based Standards

Building codes and standards around the globe have historically tended to be prescriptive—that is, be it for reasons of structural safety, fire resistance, durability or serviceability—that an established "recipe" exists and must be followed as an established *minimally* accepted performance measure. These are in the form of detailed codes and standards on every aspect of the structure of the building, including external and internal enclosures, as well as services such as water, gas and electricity. Builders concern themselves with meeting these minimums, and while their work is at times inspected, as long as they are following the "recipe book", there is no need for the use of engineers on any part of the building process.

Performance-based codes and standards, on the other hand, state how a building or component is *supposed* to perform, without explicitly stating how this performance is to be achieved.

To fully understand the distinction, consider the example of fire safety, an objective common to all housing codes around the globe. A prescriptive code would specifically state what one can and cannot use for materials in a wall assembly, for example, and specify just how to use these materials. A performance-based code, on the other hand, would state something like the wall must be able to contain a fire of a certain temperature for a certain period of time. The designers would then decide how this performance criteria is to be met. This puts the onus on the designer/builder to prove performance, rather than on the code officials.

"The performance approach is, in essence, the practice of thinking and working in terms of ends rather than means." (Foliente, 2000)

This makes for a very important distinction between the two approaches to building codes and standards. With the prescriptive approach, the builder has few choices in how the wall, in this example, is to be built. The code specifies specific materials, dimensions, spacings, sheathing, nails and other connectors, insulation, drywall, and so on. By following the code the builder, without the need for an outside engineer, builds to an acceptable minimal level of performance defined by the appropriate authorities. There is no room for, and certainly no incentive for, innovative solutions that could achieve a better result or even a less expensive result.

With the performance-based approach, however, as there is no defined "recipe", the builder is open to choice and *does* have the incentive to be innovative in the meeting of defined performance requirements.

This difference opens up a very interesting avenue for the builder. No longer is he/she totally occupied with meeting *minimum* performance levels as prescribed by code. **The builder/designer is suddenly in a position to offer the home buyer a range of performance attributes based on their willingness to pay.** This is because with the performance-based code system, the builder/designer has a multitude of choices in the meeting of a particular performance issue, where as with the prescriptive code, there is only *one* acceptable method. In essence, the "performance approach provides a communication interface between building professionals and the public" (Foliente, 2000). Again, the consumer has a choice of quality based on performance expectations, subject to their willingness to pay.

There is a second positive aspect for performance-based codes, related directly to international trade. With prescriptive codes, it is often the case that the code in an importing country such as Japan is considerably different from that in Canada. This can create a formidable non-tariff barrier to trade. With a performance- based codes, at least theoretically, these barriers should diminish for imported building products and systems.

On the negative side, with the onus on the builder/designer to prove that their product(s) can meet a set of performance criteria, it can be very costly, at least initially, to get acceptance. Testing and or modelling is required, and this must often be done by an independent third party testing agency to satisfy code officials. At this point, it is unclear whether or not there will be reciprocity on testing standards between Japan and Canada. It is also unclear how the new BSL will affect those Canadian firms who have already received code approval for materials or products under the old BSL. (This issue will be further addressed in Section 3.3.)

3.2 What The New BSL Means For Japan

This is precisely the question that lies on the minds of every Japanese builder, designer, wood products distributor, and wood products supplier alike.

Without question, the most immediate impact of the new BSL is related to the construction of the dominant post & beam single family homes in Japan. Under the old BSL, post & beam home construction has basically been void of ANY codes and standards, prescriptive or performance-based. Post & beam homes have been, and still are, mostly built by small, local builders (komuten), and "quality" aspects have been a function of their reputation alone[7].

The new BSL challenges this age-old tradition. There is much concern in Japan and among importing companies whether the komuten are capable of making this transition to regulatory performance assurance from a quality assurance based on reputation alone? This question becomes even more complex to answer given the corresponding introduction of the new Housing Quality Assurance Law and the mandatory 10 year warranty on new homes and the voluntary "performance indicators". If they are not prepared to take on legal

[7] Note: if a home owner wishes to qualify for GHLC financing, GHLC criteria must be met for a post & beam home just as it would for a 2x4 home (see Section 2)

liability for their work, are there other agents willing to take on a performance guarantee? Will the large builders, who have largely focused on non-wood, multi-family high-rises become more dominant? Or will their potential exposure to "class action" lawsuits keep large builders away from post & beam construction given the volumes they would deal with, with any one product or system? Will smaller komuten switch to be sub-contractors for larger builders?

These are all critical questions. And they come amidst a number of other recognizable trends that have already been establishing themselves in Japan. As identified in "Trends in Wood Use in Japan" (Gaston, Cohen and Fell, 2000), these include:

1. The historical trend of increased purchase power of the Japanese yen potentially stabilizing or decreasing
2. The Kobe earthquake drives interest in home construction performance
3. Japan's aging population stimulates "healthy house"
4. Japan embraces N.A. platform-frame home construction
5. Japan post & beam home construction moves to the use of "pre-cut" components
6. Japan embraces the use of engineered wood products
7. Japan evolves to "hybrid" home construction techniques
8. Multi-family wood homes become more popular
9. Government of Japan's desire to reduce home costs.

All of these trends, including the adoption of the new BSL, point in the same direction; address the desire for greater home structure performance, offer desired living conditions, and at reduced costs. The new BSL adds to the mix the desire for more formal builder/designer accountability.

These concurrent trends to the introduction of the new BSL are of critical importance in any speculation on what the ultimate impact of regulatory reform will mean to wood material and product suppliers. **In effect, the new BSL is likely to do little more than accelerate changes that were taking place anyway.**

The Japanese home market in Japan has grown to expect greater performance, and the new BSL's primary objective can be thought of as facilitating this expectation through regulation. Understanding how the code changes will play themselves out in Japan over the coming years is obviously important to Canadian suppliers. However of equal importance is the underlying move to more factory-built components, expected increases in both platform-frame and hybrid home construction, and the related growth in the demand for engineered wood products and kiln-dried lumber.

Finally, while the move to performance-based codes is often considered an advantage to foreign suppliers, the new BSL maintains highly prescriptive components. This is particularly true where occupancy safety is an issue, such as fire and seismic codes.

3.3 Impact of BSL and Importance to Canadian Suppliers

One of the key elements of importance to Canadian exporters is how materials and products can be certified according to the new BSL. While the new BSL has been put into full effect, there remains considerable confusion on the part of Japanese builders and material/product suppliers—not to mention foreign suppliers—on its practical application. As stated in the introduction to this section, the *intent* of the new BSL is to be performance based as opposed to prescriptive based. Recent interviews (November, 2000) with builders, component, material and wood product suppliers in Japan has revealed that no one seems sure just how such performance is to be evaluated. In short, the new BSL seems to leave a lot for interpretation.

Right now, the ONLY approval body for granting code approval is the Building Center of Japan. While the intent is to get this process at arms length from the Japan Ministry of Construction by their granting "approval body" status to private organizations in Japan *and abroad*, this has yet to occur. It is not hard to imagine the Building Center of Japan is having great difficulty keeping up with requests for interpretation of the new BSL.

At the time of this writing, very little of the new BSL, and associated documents has been translated into English. The best that can be said as regards Canadian exporters to Japan, is that this is a period of transition and confusion for the Japanese themselves. This means that it has never been more important for a Canadian supplier to communicate closely with their Japanese customers to track implications of the adoption of the new BSL as they unfold over time.

From recent interviews with single family home wood material/product specifiers, it can be said that there does not seem to be undue concerns on the new BSL itself—that the meeting of performance codes will ultimately sort itself out. In fact, there did not seem to be great concerns about meeting the mandatory 10-year warranty (see Section 4). Of greatest interest to these specifiers was the introduction of the nine voluntary performance indicators (see Section 5). Further, the primary interest of home builders was to obtain "type approvals" as a marketing tool for their homes. A type approval would allow the acceptance of a system or component that could be used either by more than one builder or by a single builder in more than one home.

One item of particular interest to Canadian wood products/materials exporters with the new BSL is the phase-out of Section 38 under the old BSL. Any exporter holding Section 38 approval on proprietary structural members/systems (such as Parallam™ or Timberstand™) will have their approval expire over the coming two years. After this time, there will be *no* need for "section approval" for roof trusses, and possibly for other systems such as wall panels (this is not yet clear). For structural members other than roof trusses, suppliers are now able to get approval on proprietary products through Article 68 – Section 26 of the new building code.

An important distinction of the new Article 68-26 is that it covers structural issues but does *not* cover fire (which the old Section 38 did).

It is very important for Canadian exporters to recognize that as a result of the new BSL and the associated mandatory and voluntary warranties that there could be a change in the building industry structure in Japan. This could include increased market share by bigger builders and associated changes in wood product/material distribution.

Application to Canadian Exporter

- The most immediate impact of the new BSL is that the construction of the post & beam homes (which represents the majority of single family starts in Japan) are now subject to code regulations. Historically, post & beam homes were "warranted" only by individual builders' word or reputation (unless GHLC financing was sought, in which case GHLC standards had to be met). This has the potential to affect the nature of the demand for building materials and products supplied by Canadian and competing producers.
- The new BSL is likely to accelerate changes that were already taking place. This trend include the dramatic growth in the use of pre-cut building components for post & beam homes (including the use of glulam and kiln-dried lumber), the growing popularity of N.A. style platform-frame homes, and the emergence of hybrid post & beam / platform-frame homes.
- The introduction of the new BSL is surrounded in a cloud of uncertainty at present as to what it will mean to the building industry, distribution and material supply. There is also great uncertainty on how the new BSL will be enforced.

Reposition For Advantage Based on Revised BSL

- The performance-based nature of the new BSL, while not void of all prescriptive code components, could open up market segments that were not available under the old BSL.
-
- Track and align with possible changes in the specifier of your wood products/material exports.
- Track and align with possible changes in the distribution of your wood products/material exports.
- Wood product/material specifiers in Japan will likely demand more performance support data on building products/materials.

4.0 Building Inspections and the 10 Year Warranty

4.1 Introduction

The government of Japan has identified a need to restructure the Japanese construction industry. Various articles in the Economist have strongly supported this need. This includes both contractors that rely on the many government sponsored infrastructure projects as well as the residential construction sector. As part of the Japanese government's efforts to restructure the residential building sector and improve the overall quality of housing the Housing Quality Assurance Law (HQAL) was created. The overall objective was to provide homebuyers with specific assurance concerning quality and provide safeguards in resolving disputes with building contractors. This law went into effect in April 2000.

The almost nonstop building boom during the strong economic growth of the eighties and early nineties had allowed some poor quality builders to develop successful businesses. Thus, the preponderance of small house builders, particularly for single family dwellings, included both high quality carpenters as well as relatively untrained and poor quality builders[8].

After the Asian crisis, many of these small builders were either going bankrupt or feeling the problems of tight credit that resulted from the Japanese bank crisis. Some homeowners were being left stranded with unfinished houses and substantial debt due to the high number of bankruptcies. In other cases builders cut corners in order to remain solvent despite declining numbers of house orders. This led to an increase in substandard housing as well as escalating numbers of houses there were finished by the original builder.

For years annual surveys conducted by the Japanese government showed that the Japanese consumer was not satisfied with the housing provided by the construction industry in Japan. These problems intensified with the economic downturn of 1997. In response the government created the HQAL to both improve consumer confidence as well as improve the overall quality of housing.

There were four distinct objectives of the HQAL:

1. to ensure each new house has a 10 year warranty to both improve the quality and performance of residential homes and increase consumer confidence in Japanese housing,
2. to provide home buyers with a mechanism for resolving disputes with building contractors,
3. to establish a housing completion guarantee system, and,
4. to establish a set of "Housing Performance Indication Standards" against which specific houses can be compared.

The first three portions of the HQAL will be examined in this section while the Housing Performance Indication Standards, the only voluntary portion of these four objectives, will be examined in the following section (Section 5). These first three objectives (10 year warranty, a means for homebuyers to resolve disputes and a housing completion guarantee) can be considered the mandatory three legged stool to improve the quality of both new houses and the house building experience for Japanese consumers.

[8] Carpentry was one of the labour intensive jobs that many Japanese avoided in favour of white colour office or factory work that offered lifetime employment and security. This led to erosion in the skills of the average carpenter and the subsequent development of the pre-cut industry for traditional wood housing in Japan.

The HQAL, in conjunction with changes in the GHLC loan qualification are expected to change the residential construction industry in Japan in terms of structure, material and product selection, and the use of imported and domestic building products.

4.2 Ten Year Warranty

One of the key parts of the HQAL requires homebuilders to provide homebuyers with a 10-year warranty on all new houses built in Japan. This warranty must cover the house against structural defects and low durability. Included in the definition of low durability is rain penetration into the structure a worldwide problem in residential construction. Homebuyers may make a claim against the homebuilder if the structural stability or durability of a house does not meet a specific set of criteria for structural performance, water leakage, and external cracks [9].

These criteria are still under discussion and have not yet been finalized. However the "Judgment Standards for Defects" should be published in 2000. They will be prescriptive rather than performance based and are expected to be very detailed. They will most likely undergo a series of revisions over the next few years. An example of the detail of one of the prescriptive standards would be that a floor should not have a slope exceeding 6 per 1,000 or the builder would have to make the floor level within this guideline.

Since 1982 the Organization for Housing Warranty (OHW) which is affiliated with the Ministry of Construction has provided 10-year warranties for registered builders. Paying a relatively small registration fee enabled any contractor or builder to become registered. The builder had to cover all warranty costs during the first two years of the warranty period. However, during the remaining eight years of the warranty the builder was responsible for only a specified claim amount, with the remaining portion of the claim covered by the OHW. However the OHW has paid out less than 1% of the monies collected from builders in registration fees (only ¥50 million out of ¥12 billion). This is despite the fact that many purchasers of new homes have a very low opinion of the quality of their houses. This has led to speculation that the two-year exemption period may be removed. With the new mandatory ten year housing warranty, and its rigorous prescriptive nature, it is not known whether the OHW will continue to register all builders, regardless of size, financial stability, or quality of construction as it has done in the past. Protecting the financially weak or low quality builders may jeopardize the solvency of the OHW.

4.3 Warranty Enforcement

The bureaucratic nature and tendency for the Japanese to avoid confrontation contributed to few claims under the OHW. Many homeowners preferred to live with the problems rather than enter a protracted and often confrontational process for redress. To ensure improved consumer service the HQAL includes a second objective: the establishment of a mechanism for resolving disputes with building contractors. Alternative Dispute Resolution (ADR) bodies will be established in each prefecture in Japan to settle disputes arising from this new warranty. These bodies will work to reconcile differences between homeowners and builders during the 10 years the warranty is in effect. By using alternative

[9] Houses are replaced every 20-30 years in Japan, most frequently due to loss of structural integrity, decay or a desire to change styles. For more information see Lampert and Ikehata, 2000 and Cohen and Gaston, 1998.

dispute resolutions, the cultural propensity to avoid confrontation should be alleviated.

Each ADR body will be staffed by lawyers who will use the "Judgment Standards for Defects" to determine whether a defect is sufficiently severe to require correction or compensation.

The purpose of the detailed and prescriptive warranty standards is to create a national benchmark of quality for housing regardless of construction method or material. The purpose of the warranty resolution criteria is to create a means for homeowners to ensure that these standards are met and provide non-confrontational redress for houses below the prescribed quality benchmark. Similar to the GHLC the HQAL is a means of improving the quality of residential construction without the appearance of undue prescriptive regulation in the Building Standard Law. It also allows changes to these standards without the typically onerous and time-consuming process of changing the building law itself. However, setting quality standards and creating a means to ensure redress if theses standards are not met are only two of the three legs of the stool required by the HQAL of 2000. The third leg provides protection to the consumer should the builder not be able to complete construction of the house.

4.4 Housing Completion

Many of the houses in Japan are rebuilds constructed by small builders. During the last part of the nineties there was an unprecedented number of bankruptcies of small businesses due to the crisis in Japanese financial institutions. Many of these small businesses were komuten (i.e. small traditional house builders) unable to secure loans from the banks who overreacted to the criticism of sloppy loan policies by halting almost all new loans for a period of time.

It is typical for payments for construction in Japan to be made by the homeowner to the builder prior to completion of each construction activity. The owner would pay one third prior to the start of building, a further third when the house has been framed and the final third upon completion of the house. However, with banks tightening their loan policies and the more than 25% reduction in housing starts from 1996 to 1998, many small builders were going bankrupt leaving consumers in a triple bind. Consumers would have 1) partly finished houses, 2) outstanding liens on building materials already incorporated into the house, and, 3) dramatically increased construction costs to have a different contractor finish the house construction job.

To prevent this situation from reoccurring there is a provision in the HQAL that protects homebuyers against the default or bankruptcy of the builder or contractor through the Completion Guarantee System.

This system will provide homeowners with insurance so that if their contractor or builder goes bankrupt there will be sufficient funds to complete construction of the house. The legislation provides no prescribed method indicating how builders are to offer this insurance. Larger builders are of sufficient financial strength and size to offer this insurance on their own. However, for most of the small builders several new approaches are needed to provide both the 10-year house warranty and the completion guarantee. Since this law is just being introduced in 2000, new approaches are still being developed. A few of these new initiatives already launched are explained below.

One organization, the Jutaku Anshin Assurance Company, is a privately funded effort organized by 52 national building material retailers[10] (each of whom contributed ¥5 million). This group has substantial support from a consortium of four

[10] A building material retailer in Japan is actually a wholesaler selling to the final builder. There are over 30,000 of these retailers in Japan. A national retailer is of significant size and often sells to smaller regional distributors who then sell to the builders. For a full discussion on distribution in Japan see Jahraus and Cohen, 1997.

major Japanese insurance companies. Another group, the OHW is publicly funded and will also provide completion guarantees to homebuyers. Both of these organizations will be offering the house warranty and the completion guarantee.

These organizations will be responsible for any default or repairs that the house builder is liable for under the 10-year house warranty and the completion guarantee. Therefore, these organizations (as well as any new ones created) will require a house builder to prove their fiscal stability. Thus the house builder will have to provide certain financial and business records to the insuring agency. If a builder is not deemed to be financially stable, they will not be able to join the organization and will not be able to provide a completion guarantee to their customers.

Of the approximately 160,000 contractors in Japan, more than 100,000 build less than ten homes per year and many of these build just 1 or 2 houses annually. It is uncertain how many of these small firms actually has the documentation necessary to prove that they are sufficiently stable to qualify for one of the associations that will provide completion warranties. It is not clear how someone who cannot provide a completion warranty will be treated.

There are a wide variety of opinions in Japan regarding how these small "mom and pop" house builders will be treated. One opinion is that the government will provide the assurance once sufficient numbers of small builders experience problems securing new house construction contracts due to a lack of warranties. A contrary opinion expressed in Japan is that this system will be used to drive many of these small builders under the wings of larger builders consolidating the residential construction industry and making it easier to monitor. Yet others feel that having adequate insurance may become a requirement for qualifying for a GHLC loan. There are almost as many opinions on the impact of these warranties as there are builders in Japan.

It is interesting to note that the building material suppliers are one of the organizations providing warranty completion guarantees to small builders. This will ensure that these small builders continue to purchase all their materials from these established distributors and increase or at the least maintain the power of these distributors in terms of selection of building products in use in Japan for residential construction.

There is speculation in Japan that the need to provide both a 10 year warranty and a completion guarantee will provide the mechanism to remove those small builders that do not construct quality homes or that are not financially stable. This could radically restructure the construction industry in Japan, particularly for residential single family dwellings. However, there is a second opinion that when these new warranties and guarantees are implemented, the government will use public funds to cover all existing builders and protect the jobs of many of the small builders and their crews. Yet another opinion in Japan is that many of the small builders will be forced to join larger builders as sub-contractors in order to qualify for warranties and provide guarantees. There is yet another school of thought that thinks that these warranties and guarantees will not be enforced since it would result in an unacceptable job loss. Only time will tell which opinion, if any, is correct. Regardless of the specific acts or laws implemented there is strong support to improve both the quality of new house construction and improve the mechanism for resolution of disputes in new house construction in Japan.

4.5 Impacts of Warrantees and Guarantees

Regardless of the level of enforcement there will be significant impacts due to the required 10-year warranty and the completion guarantee. One of these impacts is the desire for builders to protect themselves by selecting higher quality and better performing materials for construction. This will be even more reinforced with the voluntary nine performance indicators to be

discussed in the next section. This trend is already reflected in the dramatic increase in use of dimensionally stable kiln dried lumber and glue laminated posts and beams in house construction. This trend is reflected in increased domestic kiln capacity that still falls far short of satisfying Japanese domestic demand for kiln dry material. This has led to a dramatic growth in the import of kiln dry lumber from Europe and other offshore suppliers. These materials reflect the desire for more uniform and stable structural components.

Another impact is the desire of builders in Japan to have warrantees and guarantees provided with the building materials and products they purchase. Studies in 1998 clearly demonstrate the need for product certification (and not process certification) for building products imported into Japan[11]. Builders as well as distributors will be looking to push the warranty and guarantee responsibilities onto the suppliers of both building materials and products. Just recently a new consortium of pre-cut mills has developed a warranty system against defects which will be running in October 2000.

According to a recent Japan Lumber Journal (May 31, 2000) over 60% of new traditional post and beam house construction in Japanese urban centres uses materials from a pre-cut facility. These factories cut and notch the main structural supports (posts and beams) for a house in a factory. Once taken to the building site, the carpenter just assembles the pre-built structural components. Moving the notching and cutting to the factory has helped compensate for the lack of skilled carpenters able to do the job on site. It has also enabled the implementation of modern quality control techniques for house manufacture and has promoted the use of stable materials (such as kiln dried lumber and glue laminated beams).

In June 2000 Sumitomo Forestry Company Ltd. (one of the larger house builders in Japan) announced "PreCut Forum 21". As reported in the June 30, 2000 Japan Lumber Journal, 97 pre-cut mills and eight makers of processing machinery have already committed to this organization. The members are responsible for 65,000 housing starts per year. This group will work together to improve quality control and reduce costs of production. They will start a 10-year warranty system against defects in the structural components they sell for house construction. This is just one of many announcements that show how the warranty and guarantees required by the HQAL will be pushed down on the building material and product manufacturer. As with most changes this will be a two-edged sword, particularly for importers into the Japanese market.

The requirement for 10-year guarantees will be pushed down the supply chain from house builder to building material and product supplier and even manufacturer.

For many of the builders that construct 500 or more houses per year a 10 year warranty is already common. Some builders offer a 20 year warranty but only after a detailed inspection after 10 years which produces a mandatory renovation list. The home owner is responsible for covering the costs of these renovations in order to qualify for the extended twenty year warranty. This has created a new business unit for the house builder that is dedicated to repair and remodeling (called reform in Japan).

[11] For more information please see Cohen and Gaston, 1998a

What does this mean to Canadian Exporters

The need to provide the Japanese importer or user of imported products with confidence concerning the performance and longevity of imported products will grow over time. The need for warranties and guarantees for both building materials and products will grow dramatically over the next 2-5 years. Canadian exporters can approach this in several ways. However it is important that Canadian exporters:

1. Do not to offer warranties or guarantees that cannot be met. Suppliers of products and services in Japan honour their warranties to the letter. A reputation of not honoring business commitments for a Canadian exporter would be extremely harmful.
2. Do not offer warranties or guarantees before they are properly valued. Because in Japan these are considered contractual agreements rather than a sales promotion. An exporter must not offer these warranties until they understand the quality of product required to fulfill the warranty, the cost of meeting the obligation and the fair market value of offering such a warranty.
3. Enter the market for the long term. Offering long term warranties requires a long term presence.

Reposition For Advantage Based on Revised GHLC

1. Develop and use a "Canadian based" product/material certification which provides confidence on the performance of building products. This should focus on product performance and not process and incorporate time-based durability.
2. Canadian exporters should promote whatever product or process based certification that they currently have. For example, ISO 9000 or ISO 14000 or other legitimate certifications.
3. Exporters of building materials must ensure that they are stable and can be pre-notched for assembly at a later date. This is to ensure proper fit. This must be accomplished as Japan has both high levels of humidity as well as dramatic fluctuations in relative humidity. This creates problems for natural building materials that are not properly prepared for this climate.
4. Exporters of building products should consider offering some form of guarantee with a 10-year time frame. This could be a limited guarantee with declining refund as time progresses. It should require proper installation to be in effect given some of the quality problems associated with poor installation of items such as windows.

5.0 Nine Voluntary Performance Indicators

5.1 Introduction

The "Housing Performance Indication Standards" are part of the HQAL but are the only voluntary section in this law. They provide a set of standards for nine indicators against which the performance of specific houses can be compared. The overall objective is to provide house buyers, the consumers, with an unbiased means of comparing nine important criteria between both different houses and different house builders. The nine performance indicators and a brief explanation of what is being measured are shown in Table 2.

Table 3: Nine Performance Indicators

Indicator	Explanation
structural stability	♦ earthquake-proof, loading, foundation
fire safety	♦ fire spread time, heat sensors, escapes, etc.
durability	♦ decay & deterioration
ease of maintenance	♦ ratio of common pipes to common pipes
energy efficiency	♦ insulation, window types, etc.
air quality	♦ ventilation & formaldehyde
light environment	♦ ratio of exterior openings to wall area
acoustics	♦ insulation for noise, transparency loss, etc
barrier free design	♦ convenience for elderly & physically impaired

Adapted from Japan Lumber Journal, Jan 31, 2000.

The Ministry of Construction has developed specific measures for each of the nine indicators. These are technical measures that are currently under review by various agencies and associations. Based on these measures a house would be ranked for each performance indicator in one of between three and fivelevels of performance. For example, in March 2000 durability was defined as the expected longevity of a house based on decay and deterioration of the structure. There were three performance levels representing longevity due to durability: 1) less than 50 years, 2) 50-75 years, and, 3) over 75 years. All of these, even the lowest, represents a longevity far greater than the current average life span of a single family dwelling in Japan which is between 20 and 30 years depending on the region[12].

For most performance indicators there will be three levels. The lowest level in general is consistent with minimum code requirements. The middle performance level is generally in line with GHLC requirements, which tend to be more demanding than code. In fact, there are efforts to harmonize GHLC requirements and level two performance requirements. Finally, the top level is the most demanding and is consistent with the concept of a "seventy-five year house".

The expectation in Japan is that the actual definition of each level for each indicator will evolve over the next few years but that the nine categories for the indicators will remain

[12] In Japan two of the three most important reasons for replacing a house are to change style and to increase size. Thus many potentially durable houses are being replaced. This performance indicator evaluates longevity due to durability only and is not an accurate surrogate for overall house longevity.

the same. This was the opinion of Japanese builders and distributors interviewed in both 1999 and 2000. For up to date information on the exact status of this voluntary performance system, as well as the evolving technical definitions for the level for each performance indicator, the reader should contact Canadian representatives in Japan. These would include both association representatives and/or government personnel with the Consulates or Embassy[13].

5.2 Evaluation Methods[14]

The performance of individual houses that chose to use the nine voluntary performance indicators will be judged by a "Designated Evaluation Body" using criteria established in the "Japanese Housing Performance Indication Standards". These evaluation bodies will be private but must be accredited by an appropriate government agency. They will be responsible for approving the architectural design of the house and for providing on-site inspections of specific activities during the construction of the house. It is expected that there will be three distinct phases or timing of inspection to evaluate: 1) the foundation process, 2) the structural framing process, and, 3) the interior finishing process. Houses that are judged to meet or exceed a specific level in the performance indication standards will receive certification as a "Performance Recognized House", thus providing the builder with a way to differentiate their home from those of their competitors.

This section of the HQAL also provides for manufacturers of building components that meet the performance standards to become certified as "Authorized Manufacturers of Performance Components". This should provide them with some advantage in supplying their products to builders. The Precut Forum 21, mentioned previously, is an example of a consortium of precut facilities becoming authorized manufacturers and using this authorization to expand their product line of building materials, products and systems. It is important to note that these types of consortiums will require a member of sufficient size and financial stability to provide long term assurance that the performance designation will be accurate and supported over time.

It must be stressed that the performance indication system is voluntary while the 10-year house guarantee is mandatory. The warranty creates minimum performance standards while the performance indicators are to provide consumers with a means of comparing various levels of quality that exceed the mandatory standards.

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[13] The Japan office of the Council of Forest Industries of BC has been instrumental in collecting information regarding the nine performance indicators and other regulatory changes.

[14] The Performance Standard as well as the more length Performance Evaluation Standards are being translated into English and should be available by the end of January 2001. The translation is being supported by Industry Canada, the Council of Forest Industries of BC and the American Forest and Paper Association of the United States.

What does this mean to Canadian Exporters

The impact of the Voluntary Performance Indicators to Canadian Exporters is a two edged sword. On the negative perspective it may be far easier for domestic producers to become authorized manufacturers of components than for foreign producers. It has the potential to create an unfair advantage for Japanese producers by creating barriers to authorization for imported component manufacturers. It may take years for organizations outside of Japan to be able to qualify as authorized manufacturers of components creating a non-tariff trade barrier for the more finished building materials and products.

However there is also a positive perspective. The need for assured performance for products and materials could provide expanding market opportunities for suppliers of building materials with known performance characteristics (e.g. machine stress rated lumber, tested structural insulated panels or SIP's). This would help the Japanese authorized component manufacturer achieve high performance levels

5.3 Performance Indicators and the Building Industry

5.3.1 Impact on Large Builders

The expectation is that once the Performance Indication Standards are published many of the large building companies will use their ratings on these standards to promote their houses[15]. The large builders in Japan have the in-house resources to test components and inspect the building site during construction. These companies are comfortable with the adoption of technical ratings since many have developed proprietary ratings (see Section 3.5.2). In fact many of the larger construction companies had significant input into the development of the measures for each of the nine performance indicators.

Large builders will most likely adopt the voluntary performance system quickly and use it as a tool to increase market share. Some builders are already advertising their houses based on how they are rated in the nine performance indicators. The use of the voluntary performance indicators by the large house builders may provide the foundation for establishing consumer knowledge and interest concerning these standards. It is expected that they will be the early adopters and medium sized and small builders will be forced to follow their lead.

Many large builders are also applying for "type approval". A type-approval allows builders to make performance claims about houses they build within the parameters of their approval (i.e. the approval is for unlimited structures as long as they follow the procedures that have been approved). Inspection of blueprints and then an on-site inspection will insure buildings are within the type approval they claim to be in.

[15] There are 10-15 companies that build 5,000 or more houses each year. These are the large builders in Japan. Of these the largest five companies build 20,000 houses or more annually. These large builders are often closely affiliated with domestic suppliers of products and materials. However they do enter into some long-term relationships with offshore suppliers.

However there is a direct cost in building houses that meet the higher performance levels. It is uncertain whether the Japanese consumer is willing to pay the high premium necessary for the highest level performance in all nine indicators. In fact these performance indicators create an opportunity to segment the Japanese house buying market based on groups of performance indicators and consumers willingness to pay for increased performance[16].

5.3.1 Impact on Small Builders

There are many opinions concerning the impact of the voluntary performance indicators on the overall structure of the residential construction industry in Japan. However, it is difficult to determine what speculation is due solely to the nine performance indicators and what speculation is a result of all the changes that are part of the Big Bang in Residential Construction. This section will examine all the changes regardless of the expected driver for change. One scenario would have many of the smaller builders (defined as those that build less than 20 houses per year) cease to exist as independent contractors. There are many opinions on where these builders would go. Many in Japan believe that some of these small independents would leave the industry and cease to build houses. Others believe that they may end up being subcontractors to larger builders.

The average age of a carpenter in Japan is increasing (average greater that 50 years according to Japan Lumber Journal). In addition, there is a consensus that there is a looming shortage of blue-collar workers in Japan due to the current demographic age distribution. The Japanese Ministry of Labour estimated that between 1985 and 2005 there would be a reduction of 442,784 carpenters or a decline of 4% per annum. This reduction would be most pronounced during the 1995-2005 time period. It is this aging of carpenters combined with a decreasing attractiveness of the building professions that has led to the skill shortage mentioned earlier (Section 4.5).

Implementation and adoption of the voluntary performance indicators is expected to ensure that the carpenters with the lowest skill levels, and who build the poorest quality houses, will leave the industry. By selecting those that leave the industry based on quality of construction there should be a reversal in the decline in construction quality. However, more small builders are expected to leave independent construction than then number generated by the natural decline due to age and a blue-collar labour shortage. There is an expected shift in how many of these small builders operate and a corresponding restructuring of the residential construction industry given the importance and number of these small construction companies.

There is much speculation as to how the role for the remaining small builders will change and how this change will impact the overall structure of the residential construction industry. While only time will tell the actual impact, some of the more popular speculations regarding the redistribution of carpenters from small independent builder are listed below:

- Some skilled small builders who lack the size and/or business acumen to grow larger are expected to become sub contractors for larger builders. This scenario assumes the growth of large builders as they capture increased market share of the residential construction sector in Japan. The contractors would follow the architectural design of these larger builders and construct the house based on the criteria established by large builders to ensure the performance promised by the rating of the nine indicators. The larger builders assuming responsibility for the performance of new houses built for consumers would train those small builders lacking specific skills.

[16] A project to segment the Japanese house-buying public based on the nine performance indicators has been initiated at UBC by David Cohen.

- Other small builders would become franchise builders for large house manufacturers. They would retain their existence as independent business operations but have to follow the guidelines of the major licensor. This is similar to how many fast food franchises work in North America. This option would promote some continued independence but less that small builders currently have.

- Yet a third possibility would be to have some of these small builders concentrate on a single aspect of house construction and become specialist in this area. For example some builders might become roofing specialist others might specialize in finishing. This would be the adoption of aspects of typical North American single family house construction[17].

- There is some speculation that some of the larger of the small builders (10-20 houses per year) will grow in size. This growth to 50 or more starts per year would give the builder sufficient size to be able to adopt Performance Indicators as well as other aspects of the HQAL in groups or cooperatives.

- Another possibility would be to have small builders band together under the umbrella of a larger organization that could provide the support necessary to ensure adherence to the voluntary performance standards. It is likely that large regional building distributors would be involved in this process. Small builders are very important to the much larger building material and product distributors. These distributors have a vested interest in retaining the viability of their customer base, their most important asset. To protect this asset some are willing to provide the completion guarantee as described in Section 4.4. They may be willing to use a similar process to provide and enforce voluntary performance standards.

Only time will tell which possibility will be the most frequently implemented reaction to the Housing Big Bang. However it is likely that all of these possibilities will occur to some degree. While there is much speculation about the impact of the Nine Performance Indicators, as well as other changes to the HQAL, there is much agreement that it will impact the small builder dramatically. A reduction in the number of builders and an improvement in the overall quality of the remaining builders are two of the changes that most agree, or at least hope, will result due to these changes.

Since the performance indicators are a voluntary system it is unclear whether the house-buying consumer in Japan will support this system. To date, few seminars or official publicity has been targeted towards the consumer regarding the "Housing Big Bang" which includes the Nine Voluntary Performance Indicators.

[17] In North America houses are typically built by a variety of teams of specialists. Thus different crews are responsible for the foundation, the framing and the finishing creating specialist contractors. In Japan it is typical for a single crew to build all aspects of the house and this three to four person crew would be responsible for the foundation, the framing and the finishing creating generalist builders.

What does this mean to Canadian Exporters

The impact of the Voluntary Performance Indicators and other aspects of the Big Bang in Residential Construction create problems for established exporters to the residential construction sector in Japan and opportunities to new entrants. The reduction in small independent builders is putting pressure on the traditional multi-layered distribution system. The entire distribution system for residential construction is in transition due to reduced housing starts and the impact of the Big Bang. (A study on these changes will be completed for Forest Renewal British Columbia by December 31, 2000.) Existing importers are discovering that more and more products are bypassing various layers in the distribution system. This leads to a difficult situation for existing suppliers. Do they alienate their current customers and seek to sell directly to their customers' customer or do they support their current customers and allow competitors to go more direct to the end user.

However, it also leads to opportunities for new suppliers of building materials and products. Suppliers, particularly those that service the small builders, are looking for products that will pass Japanese Housing Performance Indication Standards. Many Canadian products are already produced to rigorous CSA, UL or other criteria and may provide solutions to these suppliers. Canadian exporters should package their products and services and "part of the solution" to problems caused by all of the aspects of the Housing Big Bang with particular focus on the Nine Performance Indicators. Pre-testing of products and written assurances that they will meet specific performance criteria could provide expanding opportunities for Canadian exporters. This will often require closer relationships with some of the larger Japanese builders, suppliers and distributors.

5.4 Performance Indicators and the Consumer

The final customer of new housing is the consumer who either contracts to build (most frequently rebuild) or purchases a new house or purchases a new apartment. These consumers will ultimately decide the impact of the Nine Performance Indicators. Some expect future homebuyers to insist that each homebuilder publish their ratings on the nine performance indicators allowing consumer comparison of unbiased information on each of the nine criteria. It may become an informal requirement of the marketplace. However, there are two ways the performance indicators could become a market requirement.

The first would allow a house buyer to select a house that rates high in the indicators that are important to their purchase decision and ignore those indicators that rate low. This would promote differentiation of housing and the development of niche marketing. It would encourage large builders to develop a variety of house types that would rate high in some performance categories and lower in others. It would promote specialization of house construction. As part of initial surveys carried out for COFI in March 2000, 236 consumers were interviewed throughout the regions of Japan. While structural stability, and to a lesser extent durability, were important to almost all respondents there was a substantial variety of opinions regarding which other performance criteria was most important. These results indicated that there is a strong likelihood that there are different consumer segments. Each segment would consider different performance criteria as decision-making considerations indicating a tremendous opportunity for niche marketing. However this would require a system whereby there would be differences among the performance ratings in each criteria between different houses available to consumers. This may not be the result of the Voluntary Performance Indicators.

Some large house builders are pressuring the government to use measures for each of the nine performance indicators to ensure that their house could qualify at the highest ranking for each indicator. This would remove the potential for differentiation between houses based on varying levels of performance for different indicators. The Performance Indicators would then become similar to a simple performance label. Either a house would have one (those build by large companies) or it would not (those built by smaller, local builders).

There were two additional results of the March survey that were pertinent to this report. The first was the relative lack of consumer knowledge regarding all the changes occurring in the residential construction sector. Slightly over a quarter (26.5%) of all respondents were aware that the mandatory 10-year warranty would be required on new houses in the following month. In addition, over 90% of respondents were not familiar with the performance requirements or the responsibility of a house builder regarding house performance. Clearly there has not been sufficient promotion of these changes.

The second was that there were clear differences among consumer regarding which performance indicator was of key importance. In traditional marketing theory there are important product attributes and there are determinant attributes. The determinant attributes are those three to five characteristics that determine the buying decision. For house in Japan there are clearly different determinant attributes (or performance indicators) for different market segments. The house buying public in Japan does not appear to be a homogeneous group but is made up of different segments. There is the distinct opportunity for specialty housing (and the components, materials and products that make up the housing) targeted to specific market segments. Currently most house builders claim all possible positive attributes with little difference (at least in claims of performance) among different house builders. If there are differences in the ratings of each performance indicator between houses the opportunity for niche housing would be established.

Reposition For Advantage Based on Performance Indicators

The restructuring of the residential construction industry and the expected downsizing of the small house builder in Japan has direct application to all importers into Japan.

1. Large regional and national suppliers to these small builders will strive to provide support for the continued existence of their client base. They must provide means for the small builder to meet the mandatory warranties, guarantees and the voluntary performance indicators. To this end:

   - They will require products, materials and systems that meet rigorous performance standards. Unlike many Japanese suppliers Canadian producers are familiar with meeting these types of requirements. Unfortunately so are European competitors.
   - They will seek proprietary methods of ensuring promised performance. Canadian suppliers have a strong history in developing software systems and construction techniques to ensure that building plans (and their implied performance) are implemented during the construction phase. There may be opportunities for increased export of proprietary and modified building design software to model and test alternatives without the need for destructive testing techniques.

2. Large builders will be looking for special relationships with reliable suppliers to supply increasing amounts of materials and products to meet the nine performance criteria. They expect to capture market share and must have adequate supply of consistent quality in their products. Since many of the supply regions in Asia are becoming less stable due to political, ethnic and territorial conflicts, opportunities exist for established manufacturers in Canada.

3. Builders of all sizes will be looking for aid to produce houses that meet some or all of the nine performance indicators. This creates opportunities beyond materials and products. Software, systems, organizations, construction consulting, certification processes and means of franchising are skills that will have value as the construction industry restructures. This provides opportunities for the tertiary or consultative sector in construction.

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